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SCENARIO ANALYSIS UPDATE: COVID-19 PANDEMIC AND OIL PRICE SHOCKS

The Parliamentary Budget Officer (PBO) supports Parliament by providing economic and financial analysis for the purposes of raising the quality of parliamentary debate and promoting greater budget transparency and accountability.

This report provides an updated scenario analysis to help parliamentarians gauge potential economic and fiscal implications of the COVID-19 pandemic and recent oil market developments.

This report incorporates announced federal budgetary measures up to and including 24 April 2020.

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Summary

PBO published its first scenario analysis of COVID-19 pandemic and oil price shocks on March 27 to help parliamentarians gauge potential economic and fiscal implications.

This report provides an updated scenario analysis that incorporates a revised economic scenario and new federal measures announced up to and including April 24, as well as updated estimates of previously announced measures.

The scenario under consideration is but one of many possible outcomes. We stress that this scenario is not a forecast of the most likely outcome. It is an illustrative scenario of one possible outcome.

- We now assume that current COVID-19 control measures will remain in place in Canada through the spring and then will be gradually relaxed at a relatively slow pace—but not eliminated entirely—over the remainder of the year.
- Despite the April 12 agreement by members of the Organization of the Petroleum Exporting Countries and its partner countries to reduce their production of crude oil, we continue to assume that oil prices will remain well below their pre-crisis levels.

Given the extreme uncertainty surrounding the economic and fiscal outlook, we maintain our focus on the near term exclusively, that is, the quarterly profile through 2020 and fiscal years 2019-20 and 2020-21.

Economic scenario

Taking into consideration recent labour market performance and Statistics Canada's "flash estimate" of the decline in real GDP in March, as well as a bottom-up assessment of affected industries, we have revised down significantly our assumption regarding the impact of the COVID-19 pandemic and oil price shocks on the Canadian economy.

In our updated economic scenario, real GDP is assumed to decline by 2.5 per cent in the first quarter and then again by 20.0 per cent in the second quarter (both rates not annualized). Real GDP is then assumed to rebound modestly in the third and fourth quarters as epidemic control measures begin to be gradually relaxed.

- For 2020, real GDP growth is assumed to be -12.0 per cent, which would be by far the weakest on record since the series started in 1961.

- To put this in historical perspective, the weakest growth in real GDP on record (of -3.2 per cent) was observed in 1982—roughly one quarter of our assumed decline.

That said, our assumed real GDP growth rate of -12.0 per cent in 2020 is well within the range of growth rates implied by the illustrative scenarios considered by the Bank of Canada in its April 2020 *Monetary Policy Report*.

The sharper assumed decline in real GDP and a lower GDP price level combine to reduce the level of nominal GDP—the single broadest measure of the Government's tax base—by $177 billion in 2020 compared to our previous economic scenario.

- Relative to a counterfactual scenario in which the COVID-19 pandemic and oil price shocks did not occur, the level of nominal GDP in 2020 would be $395 billion (16.6 per cent) lower.

- We assume that there will be further job losses in the second quarter and that the employment rate (the share of the population aged 15 years and older that is employed) will fall to 53.8 per cent, which is 8 percentage points lower than its pre-crisis level in February.

- The employment rate of 53.8 per cent in the second quarter would be the lowest level on record since the beginning of the series in 1976.

Fiscal scenario

Our fiscal results include $146.0 billion in federal budgetary measures that has been announced as of April 24 based on Finance Canada and PBO cost estimates.

- Based on our updated economic scenario and including announced federal measures, the budget deficit would increase to $24.9 billion in 2019-20 and then to $252.1 billion in 2020-21.

- Relative to the size of the Canadian economy, the deficit would be 1.1 per cent of GDP in 2019-20 and 12.7 per cent of GDP in 2020-21.

As a share of the economy, the budget deficit in 2020-21 would be the largest budgetary deficit on record (since the beginning of the series in 1966-67) and sit well above the record of 8.0 per cent of GDP observed in 1984-85.

- Rising budgetary deficits and sharply lower nominal GDP boost the federal debt-to-GDP ratio to 48.4 per cent in 2020-21.

- The last time the federal debt-to-GDP ratio was above 48.4 per cent was in 1999-00. This level, however, still remains well below the peak (since the beginning of the series in 1966-67) of 66.6 per cent of GDP reached in 1995-96.

Despite the recently announced measures, additional fiscal measures may be required to support the economy in the coming months. Moreover, after support measures are provided, fiscal *stimulus* measures may be required to ensure that the economy reaches lift-off speed, especially if consumer and business behaviour does not quickly revert back to “normal” conditions.

In the context of fiscal sustainability, it is essential to distinguish between temporary and permanent budgetary measures. The current situation calls for immediate and robust policy actions to face unforeseen and exceptional circumstances. To date, budgetary measures announced by the Government are not intended to be made permanent.

Recall that prior to the COVID-19 and oil price shocks, the Government’s balance sheet was healthy. Given the temporary nature of budgetary measures, credit market access at historically low rates, and looking to historical experience, indicate that the Government could undertake additional borrowing if required.

Once the budgetary measures expire and the economy recovers, the federal debt-to-GDP ratio should stabilize and then start declining under pre-crisis fiscal policy settings. However, should some of the measures be extended or made permanent, the federal debt ratio could keep rising.

1. Key assumptions and judgements

Our updated scenario analysis includes material revisions to key assumptions and judgements in our previous report.[1]

The scenario under consideration is but one of many possible outcomes. We stress that this scenario is not a forecast of the most likely outcome. It is an illustrative scenario of one possible outcome. As more data and information become available, PBO will update its scenario analysis as necessary.

In our updated scenario analysis, we assume that current COVID-19 control measures[2] will remain in place in Canada through the spring. Further, we assume that these measures will be sufficient to flatten the epidemic curve, with the number of new cases declining over this period. Thereafter, we assume that these control measures will be gradually relaxed at a relatively slow pace—but not eliminated entirely—over the remainder of the year.[3]

On April 12, members of the Organization of the Petroleum Exporting Countries (OPEC) and its partner countries agreed to reduce their production of crude oil and called on all major producers "to provide commensurate and timely contributions to the efforts aimed at stabilizing the oil market".[4,5]

Notwithstanding this agreement, current futures imply that oil prices will remain well below their pre-crisis levels over the coming months. Indeed, in its April 2020 *Oil Market Report*, the International Energy Agency assessed that "[t]here is no feasible agreement that could cut supply by enough to offset such near-term demand losses."[6]

Based on recent developments, we have revised down our oil price assumptions for the second quarter. However, our assumptions for the second half of 2020 remain unchanged from the April 9 scenario.

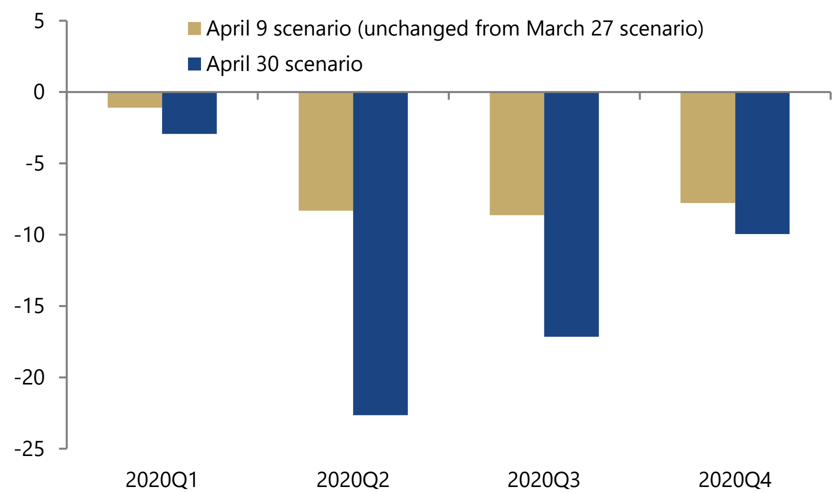
We continue to assume that the Bank of Canada will maintain the policy interest rate target at its current level of 0.25 per cent through 2020. We also maintain our assumption that current[7] and future monetary and financial policy measures will help to prevent widespread personal and business bankruptcies.

On April 9, Statistics Canada's published labour market data for the month of March, which showed a decline in total hours worked of 15.1 per cent on a month-over-month basis.[8] On April 15, Statistics Canada published a "flash estimate" of the decline in real GDP in March of approximately 9 per cent (month over month).[9]

Taking into consideration Statistics Canada’s labour market data and flash estimate for March, as well as a bottom-up assessment of affected industries, we have revised down significantly our assumption regarding the impact of the COVID-19 pandemic and oil price shocks on the Canadian economy relative to our April 9 economic scenario, which was unchanged form our March 27 report (Figure 1-1).

Figure 1-1 Impact of COVID-19 pandemic and oil price shocks on real GDP

Percentage difference from counterfactual scenario



Source: Parliamentary Budget Officer.

Note: The counterfactual scenario is based on our November 2019 projection, which did not incorporate COVID-19 pandemic and oil price shocks.

2. Economic scenario

Table 2-1 presents a summary of key economic indicators in our updated economic scenario compared to the April 9 scenario, which was unchanged from our March 27 report (based on data up to and including March 23). Appendix A presents our detailed economic scenario.

Table 2-1 Economic scenario: key indicators

	2020Q1	2020Q2	2020Q3	2020Q4	2020
Real GDP growth (%)*					
April 30 scenario	-2.5	-20.0	7.5	9.0	-12.0
April 9 scenario	-0.6	-6.9	0.0	1.2	-5.1
	-1.9	-13.1	7.5	7.8	-6.8
Nominal GDP level ($ billions)**					
April 30 scenario	2,268	1,751	1,884	2,057	1,990
April 9 scenario	2,323	2,105	2,105	2,135	2,167
	-55	-354	-221	-78	-177
Employment rate (%)					
April 30 scenario	60.7	53.8	55.8	57.8	57.0
April 9 scenario	60.8	55.8	55.6	57.2	57.3
	0.0	-2.0	0.1	0.6	-0.3
WTI oil price ($US)					
April 30 scenario	46	18	28	31	31
April 9 scenario	45	26	28	31	32
	1	-8	0	0	-2
WCS oil price ($US)					
April 30 scenario	29	7	15	15	16
April 9 scenario	28	13	15	15	18
	1	-6	0	0	-1

Source: Parliamentary Budget Officer.

Note: * Quarterly real GDP growth rates are expressed as the percentage change in the level of real GDP from one quarter to another (not annualized).
** Quarterly levels of nominal GDP are expressed at annual rates.
The April 9 economic scenario was unchanged from our March 27 scenario.
Totals may not add due to rounding.

We have revised down real GDP growth in the first quarter to reflect Statistics Canada's flash estimate of the decline in real GDP in March of approximately 9 per cent. This decline is far weaker than the assumed 2.3 per cent drop in our previous scenario.

Given the timing of the onset of the pandemic and oil price shocks in March and subsequent responses by governments, households and businesses, the flash estimate represents only a partial monthly impact.

Consequently, we assume that the month-over-month decline in real GDP in April will be about 70 per cent larger than Statistics Canada's flash estimate of the decline in March. Downward revisions to March and April pull our assumption for the decline in real GDP in the second quarter down to 20.0 per cent (not annualized) from 6.9 per cent in our previous economic scenario.

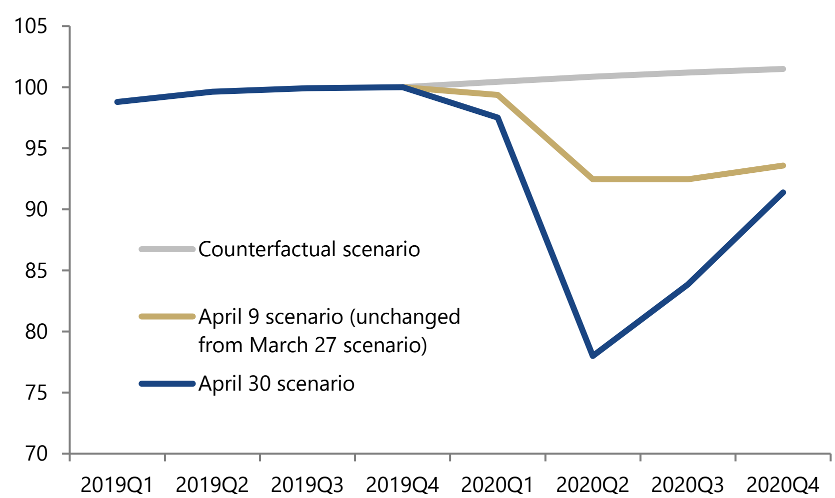
Real GDP is then assumed to rebound modestly in the third and fourth quarters as epidemic control measures begin to be gradually relaxed in late June, with some affected firms and sectors starting the re-opening process. Oil prices are assumed to rebound somewhat in the third quarter from record lows but still remain well below their pre-crisis levels.

That said, the level of real GDP is assumed to be 10.0 per cent (7.8 per cent in the previous scenario) lower in the fourth quarter than it would be in the absence of COVID-19 pandemic and oil price shocks (Figure 2-1).

Figure 2-1

Level of real GDP under PBO economic scenarios

2019Q4 = 100



Sources: Statistics Canada and Parliamentary Budget Officer.

Note: The April 9 economic scenario was unchanged from the March 27 scenario. The counterfactual scenario is based on our November 2019 projection, which did not incorporate COVID-19 pandemic and oil price shocks.

For the year as a whole, our revised assumption is that real GDP growth would be -12.0 per cent, which would be by far the weakest on record since the series started in 1961. To put this in historical perspective, the weakest growth in real GDP on record (of -3.2 per cent) was observed in 1982—roughly one quarter of our assumed decline.[10]

That said, our assumed real GDP growth rate of -12.0 per cent in 2020 is well within the range of growth rates implied by the illustrative scenarios considered by the Bank of Canada in its April 2020 *Monetary Policy Report*.[11]

The sharper assumed decline in real GDP and a lower GDP price level combine to reduce the level of nominal GDP—the single broadest measure of the Government's tax base—by $177 billion in 2020 compared to our previous economic scenario. Relative to a counterfactual scenario in which the COVID-19 pandemic and oil price shocks did not occur, nominal GDP in 2020 would be $395 billion (16.6 per cent) lower.

Prior to the onset of the COVID-19 pandemic and oil price shocks, the employment rate, that is the share of the population aged 15 years and older that is employed, stood at 61.8 per cent in February. With a record net job loss of 1,011,000 the employment rate fell sharply to 58.5 per cent in March—a level last observed in April 1997.[12]

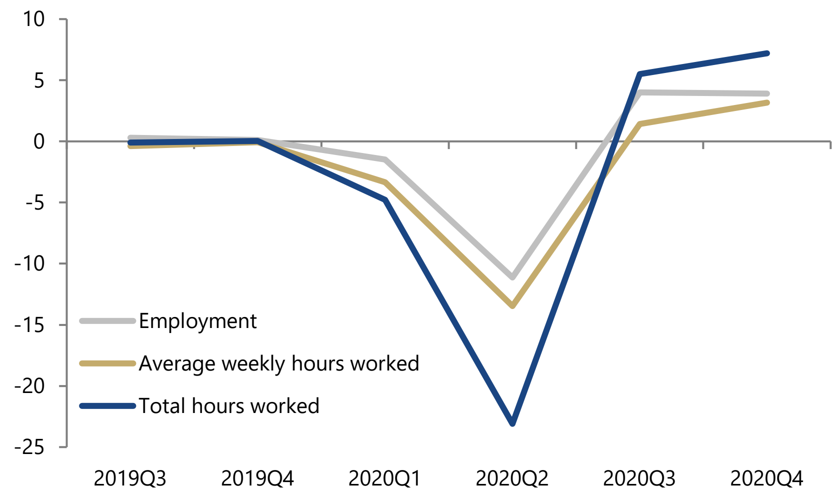
Moreover, average weekly hours worked declined by 10.4 per cent (month over month) in March, roughly twice the size of the percentage decline in employment (5.3 per cent). These declines resulted in total actual hours worked, which figures directly into GDP, falling by 15.1 per cent in March.

We assume that there will be further net job losses in the second quarter and that the employment rate will fall to 53.8 per cent, which is 8 percentage points lower than its pre-crisis level of 61.8 per cent in February. This would be the lowest level on record since the beginning of the series in 1976. The employment rate is then assumed to rebound somewhat in the second half of the year as economic activity advances.

Average weekly hours worked are also assumed to decline further in the second quarter before edging slightly higher in the second half of the year (Figure 2-2). Compared to our previous economic scenario, total hours worked in 2020 are 11.4 per cent lower.

Figure 2-2 Growth in aggregate labour market indicators

Per cent, quarter over quarter



Sources: Statistics Canada and Parliamentary Budget Officer.

3. Fiscal scenario

To generate our fiscal scenario, we simulated our projection model using the updated economic scenario. As before, we applied judgement in some cases to better capture the fiscal impact of the economic downturn on certain revenue and spending components.

Our fiscal scenario includes $146.0 billion in federal budgetary measures that has been announced as of April 24 (Table 3-1).[13] The value of these measures is based on Finance Canada and PBO estimates. Measures that include "up to" amounts are assumed to be fully spent in their respective fiscal years.[14] The Government is also providing credit and liquidity support through the Business Credit Availability Program (BCAP) and other programs.[15]

Table 3-1 COVID-19 federal budgetary measures as of April 24

$ billions	2019-20	2020-21
Canada Emergency Wage Subsidy*	-	76.0
Canada Emergency Response Benefit*	-	35.5
Canada Emergency Business Account*	-	9.1
Enhanced GST credit*	-	5.7
Canada Student Emergency Benefit	-	5.3
Enhanced Canada Child Benefit*	-	1.9
Other**	0.8	12.6
Total	**0.8**	**146.0**

Sources: Finance Canada and Parliamentary Budget Officer.

Note: * Indicates a PBO cost estimate. ** Estimates of the budgetary impact of all COVID-19 response measures are available at: https://www.pbo-dpb.gc.ca/en/covid-19. Totals may not add due to rounding.

In our April 9 fiscal scenario, we estimated that the budgetary deficit would amount to $184.2 billion in 2020-21. This estimate included $105.5 billion in federal budgetary measures that were announced as of April 7 (Table 3-2).

Based on the updated scenario, economic and fiscal developments since our April 9 report decrease the budgetary deficit by $2.5 billion in 2019-20 and increase it by $27.2 billion in 2020-21. Federal budgetary measures and their impact on public debt charges combine to increase the budget deficit by $0.8 billion in 2019-20 and by $147.1 billion in 2020-21.

Table 3-2 Revisions to the budgetary balance

$ billions	2019-20	2020-21
Budgetary balance (April 9 scenario)	**-27.4**	**-184.2**
COVID-19 budgetary measures in April 9 scenario	0.7	105.5
Impact of measures on public debt charges	0.0	0.8
Impact of economic and fiscal developments	2.5	-27.2
Revised budgetary balance before measures	**-24.2**	**-105.0**
COVID-19 budgetary measures as of April 24	-0.8	-146.0
Impact of measures on public debt charges	0.0	-1.1
Budgetary balance (April 30 scenario)	**-24.9**	**-252.1**

Source: Parliamentary Budget Officer.

Note: A negative (positive) number reduces (increases) the budgetary balance. Totals may not add due to rounding.

Table 3-3 below presents the fiscal results for key aggregates. Appendix B presents the detailed fiscal scenario. Appendix C compares the fiscal scenario to our April 9 results.

Based on our updated economic scenario and including $146.0 billion in federal budgetary measures, the budget deficit would reach $252.1 billion in 2020-21.[16] Relative to the size of the Canadian economy, the deficit would be 12.7 per cent of GDP in 2020-21.

As a share of the economy, this would be the largest budgetary deficit on record (since the beginning of the series in 1966-67) and sit well above the record of 8.0 per cent of GDP observed in 1984-85.[17]

Budgetary revenues would be $33.3 billion lower in 2020-21 compared to our April 9 scenario. The further decline in nominal household incomes and corporate profits (before taxes) drives income tax revenues lower, accounting for $22.8 billion of the reduction. Revenue from the Goods and Services Tax is also lower, down $4.7 billion in 2020-21 compared to our previous report.[18]

Program spending is $34.3 billion higher in 2020-21 compared to our previous scenario. This reflects increased spending on the Canada Emergency Response Benefit, as well as the Canada Emergency Business Account and the Canada Student Emergency Benefit (the latter was announced after April 7).

Public debt charges are $0.3 billion higher in 2020-21. This primarily reflects the impact of increased debt accumulation.

Table 3-3 Fiscal scenario: key indicators

$ billions	2018-19	2019-20	2020-21
Budgetary revenues			
April 30 scenario	332.2	340.6	280.8
April 9 scenario	332.2	339.9	314.2
		0.8	-33.3
Program spending			
April 30 scenario	322.9	341.9	509.7
April 9 scenario	322.9	343.6	475.4
		-1.6	34.3
Public debt charges			
April 30 scenario	23.3	23.7	23.3
April 9 scenario	23.3	23.7	23.0
		0.0	0.3
Budgetary balance			
April 30 scenario	-14.0	-24.9	-252.1
April 9 scenario	-14.0	-27.4	-184.2
		2.5	-67.9
Federal debt-to-GDP (%)			
April 30 scenario	30.8	30.8	48.4
April 9 scenario	30.8	31.0	41.4
		-0.1	7.0

Sources: Finance Canada and Parliamentary Budget Officer.

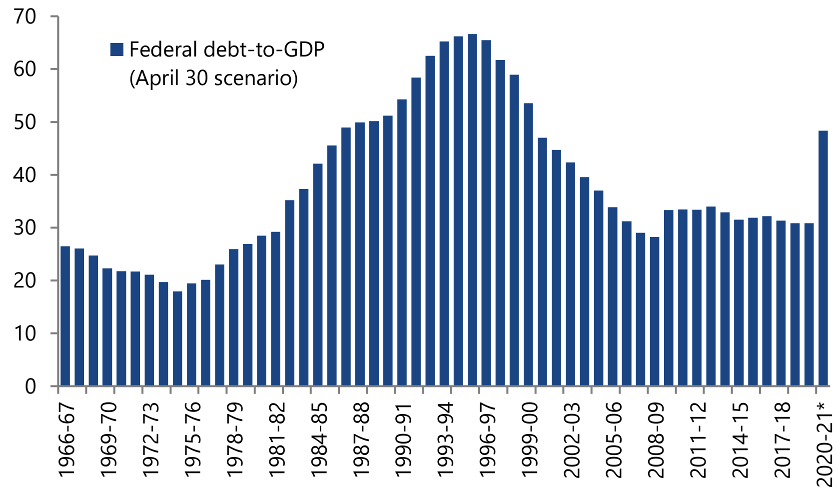
Note: Totals may not add due to rounding.

Rising budgetary deficits and sharply lower nominal GDP boost the federal debt-to-GDP ratio to 48.4 per cent in 2020-21, which is 7.0 percentage points higher compared to our April 9 scenario.

Figure 3-1 puts the increase in the federal debt-to-GDP to 48.4 per cent in 2020-21 into historical perspective. The last time the federal debt-to-GDP ratio was above 48.4 per cent was in 1999-00. This level, however, still remains well below the peak (since the beginning of the series in 1966-67) of 66.6 per cent of GDP reached in 1995-96.

Figure 3-1 Federal debt-to-GDP

Per cent of GDP



Sources: Finance Canada and Parliamentary Budget Officer.

Note: *Federal debt-to-GDP in 2019-20 and 2020-21 is based on the April 30 scenario.

Despite the recently announced measures, additional fiscal measures may be required to support the economy in the coming months. Moreover, after support measures are provided, fiscal *stimulus* measures may be required to ensure that the economy reaches lift-off speed, especially if consumer and business behaviour does not quickly revert back to "normal" conditions.

In the context of fiscal sustainability, it is essential to distinguish between temporary and permanent budgetary measures. The current situation calls for immediate and robust policy actions to face unforeseen and exceptional circumstances. To date, budgetary measures announced by the Government are not intended to be made permanent.

Recall that prior to the COVID-19 and oil price shocks, the Government's balance sheet was healthy.[19] Given the temporary nature of budgetary measures, credit market access at historically low rates, and looking to historical experience, indicate that the Government could undertake additional borrowing if required.[20]

In the short and medium term, the federal debt-to-GDP ratio will be significantly higher compared to its 2018-19 level of 30.8 per cent due to temporary budgetary measures and the negative impact on GDP.

Once the budgetary measures expire and the economy recovers, the federal debt-to-GDP ratio should stabilize and then start declining under pre-crisis fiscal policy settings. However, should some of the measures be extended or made permanent, the federal debt ratio could keep rising.

Appendix A: Detailed economic scenario

% unless otherwise indicated	19Q4	20Q1	20Q2	20Q3	20Q4	2020
Real GDP growth*						
April 30 scenario	0.1	-2.5	-20.0	7.5	9.0	-12.0
April 9 scenario	0.1	-0.6	-6.9	0.0	1.2	-5.1
Nominal GDP growth*						
April 30 scenario	1.1	-3.0	-22.8	7.6	9.2	-13.6
April 9 scenario	1.1	-0.6	-9.4	0.0	1.5	-5.9
Nominal GDP ($ billions)**						
April 30 scenario	2,338	2,268	1,751	1,884	2,057	1,990
April 9 scenario	2,338	2,323	2,105	2,105	2,135	2,167
3-month treasury rate						
April 30 scenario	1.7	1.2	0.2	0.2	0.2	0.4
April 9 scenario	1.7	1.2	0.3	0.3	0.2	0.5
10-year government bond rate						
April 30 scenario	1.5	1.1	0.8	0.8	0.9	0.9
April 9 scenario	1.5	1.1	0.9	0.9	0.9	0.9
Unemployment rate						
April 30 scenario	5.7	6.3	13.4	11.1	8.9	9.9
April 9 scenario	5.7	7.2	14.8	15.0	12.7	12.4
Employment rate						
April 30 scenario	61.8	60.7	53.8	55.8	57.8	57.0
April 9 scenario	61.8	60.8	55.8	55.6	57.2	57.3
CPI inflation (year/year)						
April 30 scenario	2.1	1.8	0.0	0.3	0.7	0.7
April 9 scenario	2.1	2.1	0.6	0.5	0.4	0.9
WTI oil price ($US)						
April 30 scenario	57	46	18	28	31	31
April 9 scenario	57	45	26	28	31	32
WCS oil price ($US)						
April 30 scenario	38	29	7	15	15	16
April 9 scenario	38	28	13	15	15	18
U.S. real GDP growth						
April 30 scenario	0.5	-1.8	-19.0	8.5	11.0	-9.3
April 9 scenario	0.5	-0.3	-4.0	0.1	0.9	-2.2

Sources: Statistics Canada and Parliamentary Budget Officer.

Note: * Quarterly GDP growth rates are expressed as the percentage change in the level of GDP from one quarter to another (not annualized).
** Quarterly levels of nominal GDP are expressed at annual rates.
The April 9 economic scenario was unchanged from the March 27 scenario.

Appendix B: Detailed fiscal scenario

$ billions	2018-19	2019-20	2020-21
Personal income taxes	163.9	171.8	142.2
Corporate income taxes	50.4	49.0	38.0
Non-resident income taxes	9.4	9.6	7.5
Excise taxes/duties	57.2	55.4	40.6
Fuel charge proceeds	0.0	2.8	4.4
Employment Insurance premium revenues	22.3	22.7	19.8
Other revenues	29.1	29.5	28.2
Total budgetary revenues	332.2	340.6	280.8
Elderly benefits	53.4	56.1	59.2
Employment Insurance benefits	18.9	19.6	34.5
Children’s benefits	23.9	24.3	26.6
Major transfers to other levels of government	75.9	78.9	80.8
Fuel charge proceeds returned	0.7	3.4	4.8
Other transfer payments	51.8	54.6	193.0
Operating and capital expenses	98.4	105.0	110.6
Total program expenses	322.9	341.9	509.7
Public debt charges	23.3	23.7	23.3
Budgetary balance	-14.0	-24.9	-252.1
Federal debt	685.5	710.2	962.3
Per cent of GDP			
Budgetary revenues	14.9	14.8	14.1
Program expenses	14.5	14.8	25.6
Public debt charges	1.0	1.0	1.2
Budgetary balance	-0.6	-1.1	-12.7
Federal debt	30.8	30.8	48.4

Sources: Finance Canada and Parliamentary Budget Officer.

Note: Totals may not add due to rounding.

Appendix C: Comparison to April 9 scenario

$ billions	2019-20	2020-21
Personal income taxes	1.0	-16.6
Corporate income taxes	0.8	-5.7
Non-resident income taxes	0.5	-0.6
Excise taxes/duties	-1.9	-6.4
Fuel charge proceeds	0.0	-0.5
Employment Insurance premium revenues	0.0	-3.2
Other revenues	0.4	-0.5
Total budgetary revenues	0.8	-33.3
Elderly benefits	0.0	0.3
Employment Insurance benefits	-1.2	-4.6
Children's benefits	0.2	0.0
Major transfers to other levels of government	0.0	0.5
Fuel charge proceeds returned	0.0	-0.5
Other transfer payments	0.1	40.4
Operating and capital expenses	-0.7	-1.9
Total program expenses	-1.6	34.3
Public debt charges	0.0	0.3
Budgetary balance	2.5	-67.9
Federal debt	-2.9	65.0
Per cent of GDP		
Budgetary revenues	0.0	-0.4
Program expenses	-0.1	3.7
Public debt charges	0.0	0.1
Budgetary balance	0.1	-4.2
Federal debt	-0.1	7.0

Source: Parliamentary Budget Officer.

Note: Totals may not add due to rounding.

Notes

1. Our previous reports are available at:

   April 9 report: https://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/RP-2021-004-S/RP-2021-004-S_en.pdf.

   March 27 report: https://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/RP-1920-033-S/RP-1920-033-S_en.pdf.

2. For a description of current public health measures, please consult the Public Health Agency of Canada's *Community-based measures to mitigate the spread of coronavirus disease (COVID-19) in Canada* available at: https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/public-health-measures-mitigate-covid-19.html (retrieved 18 April 2020), as well as *Provincial and territorial resources for COVID-19* available at: https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/symptoms/provincial-territorial-resources-covid-19.html (retrieved 18 April 2020).

3. Recall our assumption in previous reports was that measures COVID-19 physical distancing and self-isolation measures would remain in place through August.

4. See: https://www.opec.org/opec_web/en/press_room/5891.htm.

5. In previous reports we had assumed that OPEC and its member countries would not limit oil production to target relatively balanced global oil markets.

6. See: https://www.iea.org/reports/oil-market-report-april-2020.

7. For a description of monetary and financial measures to support the economy and financial system, see: https://www.bankofcanada.ca/markets/market-operations-liquidity-provision/covid-19-actions-support-economy-financial-system/.

8. See: https://www150.statcan.gc.ca/n1/daily-quotidien/200409/dq200409a-eng.htm.

9. See: https://www150.statcan.gc.ca/n1/daily-quotidien/200415/dq200415a-eng.htm.

10. For nominal GDP, the largest annual decline was observed in 2009 (5.1 per cent), which is approximately 40 per cent of our assumed decline in 2020.

11. The Bank of Canada's April 2020 *Monetary Policy Report* is available at: https://www.bankofcanada.ca/wp-content/uploads/2020/04/mpr-2020-04-15.pdf. Chart 11 (page 18) of the Bank of Canada's April report presents the range of plausible paths for real GDP levels based on the Bank of Canada's illustrative scenarios. PBO uses these bounds to estimate the implied range for annual real GDP growth rates in 2020 under these scenarios.

12. In this report we are shifting our labour market focus to the employment rate, average weekly hours worked and total hours worked. Given the epidemic control measures in place, closure of non-essential businesses and travel restrictions, the unemployment rate understates the impact of the COVID-19 pandemic and oil price shocks on the labour market.

    In our previous economic scenario, given the uncertainty surrounding how labour force definitions would be applied and how households would describe their labour market status, we had assumed that the labour force participation rate (that is, the number of employed and unemployed people relative to the population aged 15 years and older) would remain unchanged through December 2020 at its February 2020 level. However, in March, the participation rate fell sharply to 63.5 per cent from 65.5 per cent in February as 597,500 people (on a net basis) exited the labour force.

    Consequently, we have revised our assumption to reflect weaker labour force participation. This has resulted in downward revisions to the unemployment rate in the remaining quarters of 2020 shown in Appendix A despite having assumed a larger negative impact on the labour market due to the COVID-19 pandemic and oil price shocks.

13. See: https://www.pbo-dpb.gc.ca/en/covid-19 (retrieved 30 April 2020).

14. On April 8, the Government announced changes to the Canada Summer Jobs Program. Based on guidance from Employment and Social Development Canada, PBO expects that these changes will be funded from existing 2020-21 budget allocations. No funding is incremental.

15. For additional detail, please consult: https://www.canada.ca/en/department-finance/economic-response-plan/covid19-businesses.html#Increasing_credit_available.

16. PBO estimated that compensation to First Nations children and caregivers who were affected by the on-reserve child welfare system could range from $0.9 billion to $2.9 billion, if payments were made by the end of 2020 (see: https://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/RP-2021-001-M/RP-2021-001-M_en.pdf). However, given the uncertainty regarding the resolution of these claims and their timing, we have not included a cost estimate in our current scenario.

17. See Finance Canada's *Fiscal Reference Tables 2019* available at: https://www.canada.ca/content/dam/fin/publications/frt-trf/2019/frt-trf-19-eng.pdf. To express fiscal aggregates relative to GDP over history, we use the current vintage of GDP from Statistics Canada (for the series beginning in 1961). The same series in Finance Canada's tables were calculated using an older vintage of GDP, which results in minor discrepancies in our calculations.

18. The deferral of personal and corporate income tax payments does not have a direct budgetary impact in 2020-21.

19. See PBO's Fiscal Sustainability Report 2020: https://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/RP-1920-029-S/RP-1920-029-S_en.pdf.

20. For example, the measures that were implemented during the peak years of World War II resulted in massive federal budgetary deficits (averaging 21 per cent of GNP per year over 1942 to 1945) that were temporary in nature. Indeed, shortly following World War II, the federal government registered the largest-ever budgetary surplus as a share of the economy (5 per cent of GNP in 1947).

    See PBO's March 20 blogpost for additional details: https://www.pbo-dpb.gc.ca/en/blog/news/pbo-estimate-federal-fiscal-room-in-fiscal-sustainability-report-2020--pbo-estimate-federal-fiscal-room-in-fiscal-sustainability-report-2020.